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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. |
|-----------------|-------------|----------------------|---------------------|
| 09/333,049 | 06/15/99 | HIRANO | H 0819-255 |

MMC2/0926

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EXAMINER

PHAM, H

ART UNIT

PAPER NUMBER

2814

DATE MAILED:

09/26/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

Office Action Summary

Application No.
09/333,049

Applicant(s)
Hirano et al.

Examiner
Hoai Pham

Group Art Unit
2814



☒ Responsive to communication(s) filed on Jul 17, 2000

☒ This action is **FINAL**.

☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

A shortened statutory period for response to this action is set to expire 3 month(s), or thirty days, whichever is longer, from the mailing date of this communication. Failure to respond within the period for response will cause the application to become abandoned. (35 U.S.C. § 133). Extensions of time may be obtained under the provisions of 37 CFR 1.136(a).

Disposition of Claims

☒ Claim(s) 1-10 is/are pending in the application.

Of the above, claim(s) _____ is/are withdrawn from consideration.

☐ Claim(s) _____ is/are allowed.

☒ Claim(s) 1-10 is/are rejected.

☐ Claim(s) _____ is/are objected to.

☐ Claims _____ are subject to restriction or election requirement.

Application Papers

☐ See the attached Notice of Draftsperson's Patent Drawing Review, PTO-948.

☐ The drawing(s) filed on _____ is/are objected to by the Examiner.

☐ The proposed drawing correction, filed on _____ is ☐ approved ☐ disapproved.

☐ The specification is objected to by the Examiner.

☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. § 119

☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).

☒ All ☐ Some* ☐ None of the CERTIFIED copies of the priority documents have been

☒ received.

☐ received in Application No. (Series Code/Serial Number) _____.

☐ received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

*Certified copies not received: _____

☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).

Attachment(s)

☐ Notice of References Cited, PTO-892

☐ Information Disclosure Statement(s), PTO-1449, Paper No(s). _____

☐ Interview Summary, PTO-413

☐ Notice of Draftsperson's Patent Drawing Review, PTO-948

☐ Notice of Informal Patent Application, PTO-152

--- SEE OFFICE ACTION ON THE FOLLOWING PAGES ---

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DETAILED ACTION

Claim Rejections - 35 U.S.C. § 112

1. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

2. Claims 1-10 are rejected under 35 U.S.C. 112, first paragraph, as containing subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The phrases “the top electrode having a rectangular planar pattern” and “and the distance between the top electrode and another top electrode adjacent to the top electrode is smaller than the width of a bit line formed above the top electrode” are not described in the specification and invention figures. In the figure 1, the top electrode (18) is not a rectangular and the width of a bit line is smaller than the distance between the top electrode and another top electrode adjacent to the top electrode.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103© and potential 35 U.S.C. 102(f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 1-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Applicant Prior Art (hereinafter APA) in view of Hanagasaki [U.S. Pat. 5,869,859].

APA discloses a ferroelectric memory device comprising:

a ferroelectric capacitor including a top electrode 58, a bottom electrode 56 and a ferroelectric film 57 interposed between the top and bottom electrodes, the top electrode having a rectangular planar pattern;

a memory cell transistor including first and second doped layer 53 and gate 54 the memory cell transistor controlling a voltage supplied to the top electrode of the ferroelectric capacitor;

an interlevel dielectric film 59 formed over the memory cell transistor and the ferroelectric capacitor; and

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a first interconnection layer 60 formed on the interlevel dielectric film 59, wherein, in a planar layout of the ferroelectric memory device, the first interconnection layer 60 partially overlaps with the top electrode of the ferroelectric capacitor. (See Fig. 5)

The APA fails to disclose the first interconnection layer 60 does not cover at least one side of the rectangular top electrode. However, Hanagasaki discloses the first interconnection layer 11 does not cover at least one side of the rectangular top electrode as shown in Fig. 1 and as specified in col. 4, lines 60-65. Therefore, it would have been obvious to the skilled artisan at the time the invention was made to modify the teachings of Hanagasaki into the APA device to form the first interconnection layer that does not cover at least one side of the rectangular top electrode for improving manufacture yield and cost.

With respect to claims 2-6, 8-9, referencing the reasons given above, when the first interconnection layer 11 does not cover at least one side of the rectangular top electrode then: the storage line intersects only one side of the top electrode in the planar layout; the line width of the third region is smaller than that of the first and second regions; the bit line does not overlap with the top electrode in the planar layout; and the second interconnection layer totally covers the top electrode of the ferroelectric capacitor in the planar layout.

With respect to claims 7 and 10, the APA discloses the interconnection layer is containing at least one of aluminum and copper.

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Response to Arguments

5. Applicant's arguments filed 7/17/2000 have been fully considered but they are not persuasive.

Claim 1 now specified that "and the distance between the top electrode and another top electrode adjacent to the top electrode is smaller than the width of a bit line formed above the top electrode". However, this limitation is not described in the specification and invention figures but this limitation shows in the Applicant Prior Art figure 4. Therefore, the rejection is still read on the claim 1.

Conclusion

6. ***THIS ACTION IS MADE FINAL.*** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

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Papers related to this application may be submitted directly to Art Unit 2814 by facsimile transmission. Papers should be faxed to Art Unit 2814 via the Technology Center 2800 fax center located in Crystal Plaza 4, room 4C23. The faxing of such papers must conform with the notice published in the Official Gazette, 1096 OG 30 (15 November 1989).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hoai Pham whose telephone number is (703) 308-6173. The examiner can normally be reached on Monday-Friday from 8:30 a.m. to 6:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri, can be reached on (703) 308-2794. The fax number for the organization where this application or proceeding is assigned is (703) 308-7722 or -7724.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center receptionist at (703) 308-0956.

HP
Hoai Pham
Art Unit 2814
September 22, 2000


Olik Chaudhuri
Supervisory Patent Examiner
Technology Center 2800